

## System and User Interface Supporting Use of Customizable Expressions by Applications

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### *Field of the Invention*

This invention concerns a system and user interface supporting multiple different executable applications employing user customizable expressions for determining computable values or searching for records, for example.

### *Background of the Invention*

It is desirable for software applications executing on PCs, servers and other processing devices for business or other purposes to offer users the capability of customizing application functions to meet specific customer needs. To this end, it is advantageous to allow an application to support the use of a user customizable expression to determine particular decision logic to be used by the application. Such an expression may take various forms and may include algebraic elements for implementing a variety of functions including, for example, computing a value or range of values, defining search criteria for performing a record search as well as defining a statement to be verified. In a health care payment processing system, a user may enter a customizable expression to estimate an insurance company reimbursement sum for a particular procedure, or to search for particular patient records or to verify particular eligibility criteria of a specific patient, or for many other purposes, for example.

A number of problems arise in offering a user the capability of customizing expressions for use with one or more software applications. These include the difficulty posed in providing a user interface that is straightforward to use by a person who is not a software programmer and yet provides the capability to implement any function that the user may desire. Other difficulties arise in integrating the entered expression with the associated software application in a manner that allows execution of the application together with the expression in an efficient manner without significant degradation in execution speed. A further difficulty arises in maintaining multiple expressions (perhaps hundreds or thousands of expressions) associated with multiple different applications and managing the update, editing and

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replacement of expressions. An expression may become obsolete, for example, if data used by an associated application is changed.

One known system allows a user to define an expression for use with an application by employing an extensive decision matrix of available customizable expression options and associated data to be used with the expression options. This approach limits the expressions that may be used to those supported by the decision matrix and results in the creation of a complex matrix that is not user friendly. Another known system allows a user to define an expression using SQL (Structured Query Language) in the form of stored procedures to determine desired decision logic. This has the disadvantage of being difficult to use since it requires expertise to produce efficient SQL procedures and also typically exposes a user to the complexities involved in the data relationships between the expression and the application that uses it. It also bypasses the abstraction and data integrity rules that are written into the application business objects.

A system according to invention principles addresses these problems and derivative problems.

#### *Summary of Invention*

A user friendly interface system enables a user to incorporate, in an executable application, custom decision logic in the form of an expression involving a high-level script language. A system for providing a user interface display image supporting user entry of an expression involves a user interface menu generator for providing a displayable image. The displayable image includes a first image window listing a plurality of selectable data items available for incorporation in an expression as well as an image prompt element. The image prompt element permits user entry of the expression and incorporation of a data item in an entered expression from the listed data items to provide a resultant expression in response to user selection of the data item in the first image window. The displayable image also includes an icon for initiating storing of the resultant expression. The system also involves an expression processor for processing the resultant expression to provide a result in response to user selection of the icon for initiating processing.

#### BRIEF DESCRIPTION OF THE DRAWING

Figure 1 shows a user interface and processing system supporting use of customizable expressions, according to invention principles.

Figure 2 shows system functions involved in creating and processing user customizable expressions, according to invention principles.

Figure 3 shows a flowchart of a process supporting use of user customizable expressions by multiple different executable applications, according to invention principles.

Figure 4 shows a flowchart of a process for providing a user interface display image supporting user entry of an expression, according to invention principles.

Figure 5 shows a diagram showing user interaction and navigation aspects associated with the expression entry user interface, according to invention principles.

Figure 6 shows a business application display window for use in displaying an expression employed by the application, according to invention principles.

Figure 7 shows a user interface display image supporting user creation of an expression, according to invention principles.

#### DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

Figure 1 shows a user interface and processing system supporting use of customizable expressions. The system enables the incorporation of desired decision logic in a business application to tailor the application function to user requirements. The decision logic is entered in the form of an expression involving a high-level, user friendly, easy to understand script language. The user interface, for example, allows application business users, such as users involved in health care insurance reimbursement, to customize their institution rules for assigning services to appropriate contract packages and terms. In this context, a customizable expression may also be used to allow users to define formulas for calculating rates of reimbursement and to enable users to define rules for assigning services to contract packages and terms. A customizable expression may also be used to enable a user to define rules for routing scheduled task lists to individuals or groups of individuals